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ABSTRACT

The Education Data Improvement Project of the Council of Chief State School Officers (CCSSO) is described. The conceptual framework that guided its implementation is presented. The Education Data Improvement Project was designed to promote and facilitate the reform and refinement of the Center for Education Statistics (CES) national elementary and secondary public education database. As currently implemented, the common core of data is not adequate to accomplish its purposes in providing information about schools. The Project aims to improve the comprehensiveness of the national database and to improve the timeliness of reporting by state education agencies and the CES. The guiding philosophy is to expand the existing Federal data systems and the data systems of the states to create a state-of-the-art national database. To do so, it is necessary to: (1) define existing systems; (2) identify changes to improve the systems; (3) identify basic and necessary statistics; and (4) establish content and providers for a national system that incorporates the best of existing systems. Four figures illustrate the Project goals and framework. (SLD)

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COUNCIL OF CHIEF STATE SCHOOL OFFICERS
State Education Assessment Center

Education Data Improvement Project

U.S. DEPARTMENT OF EDUCATION
Center for Statistics

December 1986

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TECHNICAL REPORT: CONCEPTUAL FRAMEWORK

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TECHNICAL REPORT: CONCEPTUAL FRAMEWORK

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Improving Universe Data on Schools and School Districts

TECHNICAL REPORT: CONCEPTUAL FRAMEWORK

December 1986

Written by:
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Under Contract to:
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ACKNOWLEDGMENTS

A study of this magnitude represents the ideas, energy and perseverance of many people. We wish to acknowledge their contributions and thank them for their willingness to help the project and the Council toward successful completion of the Education Data Improvement Project.

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The members of the Council's Committee on Evaluation and Information Systems (CEIS), the State CEIS coordinators, singly and collectively, listened to our plans for the study, made suggestions, and encouraged their states to participate. In particular, Thomas Kerins, current CEIS chair, and John Stiglmeier, immediate past chair, provided much needed guidance in the developmental stage of the Project. CEIS members, and members of the Universe Task Force, Roger Hummel, Bertha McClaskey, Don Russell, and JoAnne Kerrey have been especially helpful, reacting to our plans and suggesting ways for better interactions with states.

Several members of the Center for Education Statistics staff helped to focus the study and to identify systematically the terms and data elements to be included in this phase of the project. Also they spent many hours with us, reviewing Center for Statistics' forms, documents, and handbooks, enabling us to select the most current definitions and specifications. George Wade, Dick Cook, Stafford Metz, and Warren Hughes have contributed greatly to this task. George Wade, the project officer, has been available and has offered assistance on an almost daily basis. We are also especially grateful to Lawrence LaMoure, Director of the Elementary/Secondary Statistics Division, for his support.

Finally, the professionalism of the Council of Chief State School Officers staff was key to the success of this effort. Ramsay Selden, Director of the State Education Assessment Center, tirelessly reviewed our designs and instruments, made suggestions for their improvement and provided technical guidance throughout. George Rush, Ken Scott, and Tommie Williams assisted in formatting and entering our data, and in producing the final profiles. Yvonne Warren and Erma Wylie-Hands worked unflaggingly and with constant good humor to provide support to the staff and to produce all of our reports.

To all of these people, we say thank you.

Major Contributors
to the
State Profiles of School and School District Universe Data

The common core of data coordinators, designated by their chief state school officers as the official state liaisons with the Center for Education Statistics, are the primary respondents to the project. The Education Data Improvement Project could not have been implemented without substantial efforts by these state common core of data coordinators, who provided original state data collection instruments; verified and corrected project analysis of those instruments on the Shuttle; and, on at least two occasions, verified corrected, and clarified individual state profiles and the project's white papers. The profiles were also reviewed by the chief state school officers.

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PREFACE

This document is one of a series of reports resulting from the Council of Chief State School Officers' Education Data Improvement Project. The project, funded by the U.S. Department of Education's Center for Education Statistics, is a joint effort of the states and the federal government to improve the quality and timeliness of data collected, analyzed, and reported by the Center. The project, initiated by the Council as the first effort of its State Education Assessment Center, coincided with the Department of Education's extensive redesign of the national elementary/secondary education statistical data system. Improvement of the Center's common core of data, collected annually from state education agencies, is the project's primary goal.

In November, 1984, the Council of Chief State School Officers voted to "work actively with the National Center for Education Statistics (currently the Center for Education Statistics) to ensure that reporting of data from all sources is accurate and timely." This vote committed the Council to improving the comprehensiveness, comparability, and timeliness of data reported to the Center for Education Statistics by the state education agencies.

In several recent speeches and interviews, Chester E. Finn, Jr., the Assistant Secretary for the Office of Educational Research and Improvement (OERI), listed four goals for strengthening the nation's ability to achieve educational excellence. The Department of Education's primary goal--to significantly improve the nation's educational statistical information base--both in the amount of data and its quality--suggests substantial interest in the work and goals of the Education Data Improvement Project.

The Center for Education Statistics and the states share responsibility for a statistical system in education that is inadequate for today's needs. This project is one effort wherein they are working together to make the basic system efficient and effective.

The goals of the project are to describe state collection of data elements currently contained in the common core of data, to describe those elements that might be added to make the common core of data adequate and appropriate for reporting on the condition of the nation's schools, and to make recommendations to states and the Center for Education Statistics for making the common core of data more comprehensive, comparable, and timely. During this first year of the project the focus has been on the school and school district universe files.

The project is examining the universe files to identify all states collecting specific data elements, to specify in detail the definitions and specifications used by each of the states for each data element, and to isolate discrepancies in ways different states define and measure those various elements. This current report presents a description of the Education Data Improvement Project and the conceptual framework that guided its implementations.

INTRODUCTION

In November, 1984, in a dramatic break with its own historical position, the Council of Chief State School Officers voted to ". . . provide leadership in the development, use, and interpretation of assessment and evaluation procedures and results." This vote committed state education agencies and the Council of Chief State School Officers to state-by-state comparisons of educational progress, a commitment which carries an enormous responsibility for adequate and appropriate collection, analysis, and reporting of information.

The decision taken by the Council resulted in a special unit, the State Education Assessment Center, to implement this and related policies of the chief state school officers. The Center was put into operation in September, 1985, and has been carrying out intensive and comprehensive conceptualization and planning for this major new collective enterprise of the state education systems.

The Assessment Center has responsibility for providing national leadership on educational assessment and evaluation. The Center represents the states' elementary and secondary education leaders in developing, interpreting, and using assessment and evaluation procedures and results for reporting on the status of schools and schooling. The

Center involves every state in the planning and procedures of its work so that all perspectives are represented. Technical and user advisory networks ensure the end results are accurate and responsive to state needs.

The Assessment Center's resonsibilities include leadership in collecting and reporting comprehensive, timely evaluation and assessment information so state-by-state comparisons can be made. For valid and reliable information, the Assessment Center must seek education statistics and indicators that are comprehensive, standardized across all states, and reported in a timely way.

The State Education Assessment Center is charged with implementing the chief state school officers' "Position Paper and Recommendations for Action," adopted at their 1984 Annual Meeting. The "Position Paper" directs the Assessment Center," to work actively with the National Center for Education Statistics [currently called the Center for Education Statistics] to ensure that reporting of data from all sources is accurate and timely." In response, the Council, under contract with the Center for Education Statistics, undertook a comprehensive, three-year effort to improve, expand, and standardize the Center for Education Statistics' elementary/secondary public education database. The Education Data Improvement Project is the central, or cornerstone, effort by the State Education Assessment Center to upgrade and standardize basic statistics in education at the state and national levels.

This report provides an introduction to, and an overview of, the Education Data Improvement Project. The report is divided into three major sections: a project overview and organizational structure, a discussion of the conceptual framework that guides both the design and the operation of the project, and the a description of the technical approach of the project. The report concludes with a discussion of uses and implementation of the project's outcomes and recommendations.

This report, "Technical Report: Conceptual Framework," is the first in a series of documents that describe the Education Data Improvement Project, its findings, and recommendations. The "Technical Report" is

accompanied by two additional descriptive reports: the "Development of a Shuttle for Verifying Data Elements Collected by State Departments of Education and Reported to the U. S. Department of Education's Center for Statistics," and "A Compendium: State Profiles of School and School District Universe Files."

The findings and recommendations from the first year of the project are presented in a series of white papers. The white papers are as follows:

(1) Summary: State Collection Practices on Universe Data Elements,
(2) School and Student Classifications for Universe Data Files,
(3) Variations in Definitions and Procedures for Student Counts: Enrollment, Fall Enrollment, Membership, and Average Daily Membership,
(4) Variations in Definitions, Counts, and Reporting of Prekindergarten, Ungraded, Homebound, Educated-at-Home, and Special Education Students,
(5) Collecting National Statistics on Dropouts,
(6) Federal Programs Information on School and School District Universe Files, and
(7) Summary: Recommendations for Improving the National Education Statistical Database.

The final white paper, "Recommendations," summarizes the major recommendations of the other white papers. It contains recommendations for the overall national statistical system, including specific recommendations and considerations for the Center for Education Statistics and the Center's Common Core of Data and specific recommendations for consideration by states. The "Recommendations" paper identifies critical terms that must be standardized if the national system is to be comparable across states and specifies new definitions for those terms. Finally, this white paper contains a list of the project's recommended data elements for the universe files of the national elementary and secondary public education statistical database.

In succeeding years of the project, reports and recommendations will be produced on core fiscal data and on non-fiscal, non-universe data reported on schools.

PROJECT OVERVIEW AND ORGANIZATONAL STRUCTURE

The Education Data Improvement Project, a joint effort of the Council of Chief State School Officers and the U. S. Department of Education's Center for Education Statistics is the first effort of the State Education Assessment Center. It is designed to promote and facilitate the reform and refinement of the Center for Education Statistics' national elementary and secondary public education database. The project's primary focus and the basis for final recommendations is education statistical data from state education agencies collected annually through a set of instruments currently called the common core of data. The objectives of the Common Core of Data drive the project's work.

There are four primary objectives for the core national education statistical database. They are (1) to provide the official listing of all schools (approximately 87,000) and school districts (approximately 16,000) in the country's public education system, (2) to provide basic descriptive information on the nation's schools and schooling, (3) to provide information on the financing and costs of schools and schooling, and (4) to provide a sampling frame for major national studies on education.

As currently implemented by the Center for Education Statistics and states, the common core of data is inadequate to accomplish its stated purposes. Traditionally available data have been reported three or four

years after the date of collection and, as a consequence, have not been timely for most federal and state decisionmaking cycles. The current database does not contain enough information for selecting samples for the Center's own national surveys and studies of schools and schooling. The school universe file, for example, contains the following information:

- school name, address, and telephone number,
- school type (regular, special education, vocational, other),
- grade span,
- number of teachers (total), and
- number of students (total).

There is no information about the types of students served (e.g., racial/ethnic grouping, sex, number of limited English proficient students) or the type of locale of the school (e.g., urban, rural). The available data, while descriptive, do not provide minimum information that should be known about the nation's schools.

During the first project year, the Education Data Improvement Project addresses the refinement and enhancement of the school and school district universe files to meet the objectives of providing a listing of schools and districts, providing basic education statistics, and serving as a national sampling frame. The purpose of the first project year is to improve the school and school district universe files. The second year of the project focuses on fiscal data. The third project year continues the work of the first two years to integrate the universe files and general descriptive statistics with the education finance data into a comprehensive national statistical data system.

The goals of the project are to improve the comprehensiveness of the national database to more adequately meet its objectives, to increase the comparability of data reported by the 50 states, 6 extra-jurisdictional territories, and the District of Columbia, and to improve the timeliness of reporting by both state education agencies and the Center for Education Statistics.

The guiding philosophy for the project is to build onto the extensive, existing data systems of the Center for Education Statistics and the state education agencies and to use the strongest elements within those systems

to create a state-of-the-art national statistical database. To implement this philosophy, four major activities are necessary: (1) to define, operationally, the existing systems and identify elements that are similar across states and the Center, (2) to identify changes in the system that will improve its effectiveness and efficiency, (3) to identify the basic statistics necessary for a revised, comprehensive national statistical system, and, (4) based on knowledge of the current systems, establish content and procedures for a national system that incorporates the best of the individual systems and establishes the "best fit," where possible, across all of the systems.

Organizational Framework and Relationships

This philosophy of redesigning, refining, and standardizing the existing statistical system and the organizational structure within which the project operates determines, in great part, the project's procedures and processes. The organizational structure places the project within a network of related agencies that share responsibility for a comprehensive, comparable and timely national statistical system. These agencies include states, the Center for Statistics, the Council of Chief State School Officers. Figure 1 graphically illustrates the organizational interrelationships and the project's position within them. The project coordinates the various organizations to implement the project processes and to implement the activities described above.

Structure

The project is funded by an U. S. Department of Education's Center for Education Statistics award to the Council of Chief State School Officers and is administered by the State Education Assessment Center within the Council.

Center for Education Statistics. The federal mandate for the Center for Education Statistics, in the U. S. Department of Education's Office of Educational Research and Improvement, is to report periodically on the condition of education in this country. The Center implements its charge through two general processes: by maintaining a national statistical database on schools and schooling, and by conducting periodic assessments

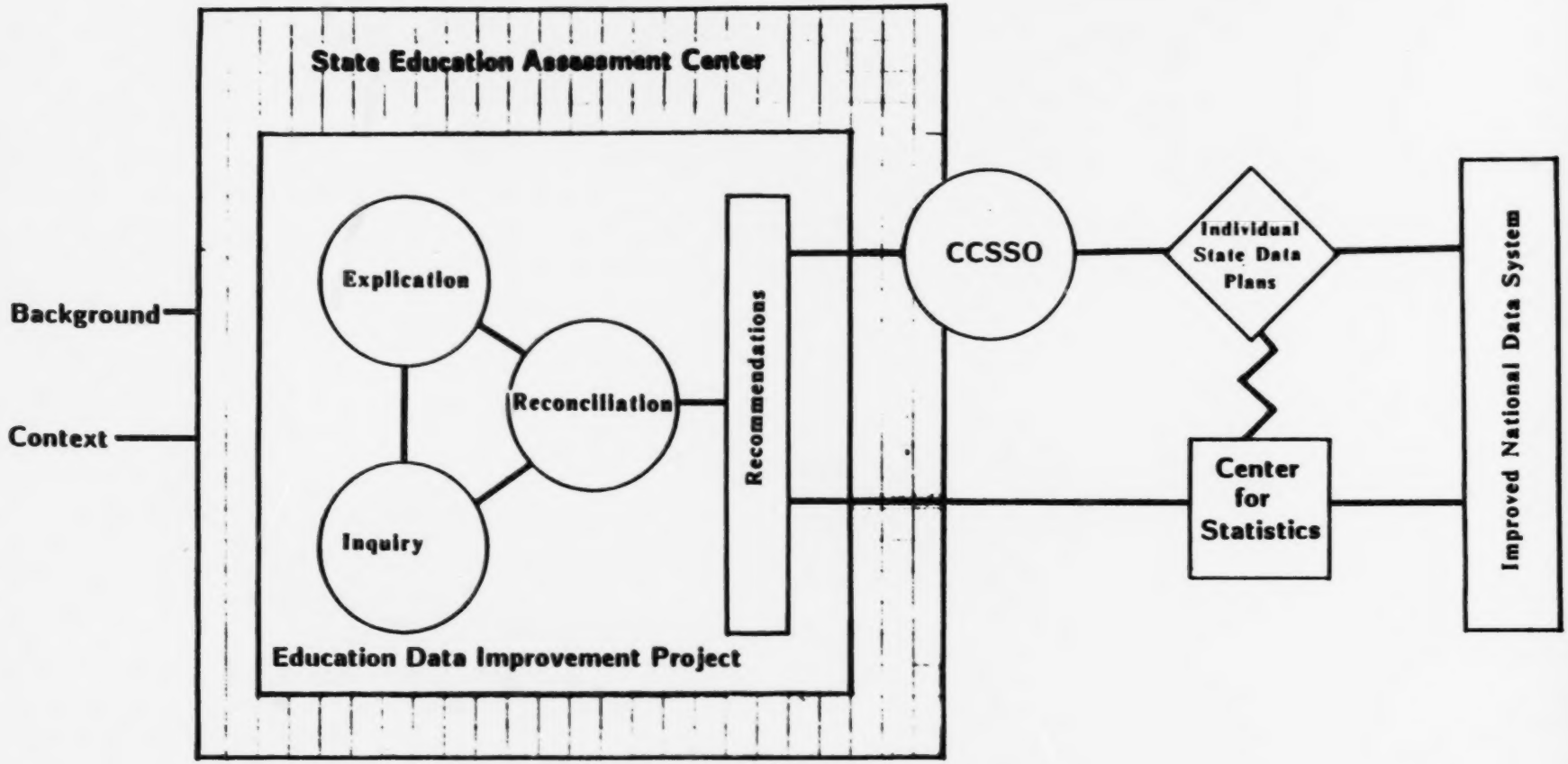

Figure 1. Organizational Framework for the Education Data Improvement Project

and surveys of education progress. For the past decade, the statistical database has consisted of the common core of data reported by the 57 state education agencies for all of the country's schools and school districts. The National Assessment of Educational Progress (NAEP), conducted every two years in reading, mathematics, science and social studies, evaluates and reports on student progress in these primary subject areas. Periodic studies on specific topics are conducted. Some recent examples are the High School and Beyond study, the National Educational Longitudinal Study of the Class of 1988 (NELS 88), and the School and Staffing Survey.

There are several components of the national statistical database, such as elementary and secondary public, nonpublic schools, and post secondary education. The target of the Education Data Improvement Project is the national education statistical database on elementary and secondary public schools.

Council of Chief State School Officers. The Council of Chief State School Officers is a membership organization representing the leadership of the nation's 57 state education agencies. The members of the Council represent the 87,000 schools and 16,000 school districts making up the national public education statistical database. The "Position Paper" adopted by the Council in 1984 provides a public statement of its position on national statistics on education. The "Position Paper" states:

> . . . The publication of data brings education to the attention of the public and makes it an issue of enduring concern. By comparing the performance of a school, district, or state with itself over time, or with other schools, districts, or states, data serve to exhort, motivate, or reward.
>
> A second use [of data] is to aid local, state and national policymakers in understanding the consequences of changes in policy and to aid them in implementing policies once they are adopted. . . .
>
> Finally, and coming full circle, data serve to make education accountable to the public. . . .

The major challenge for the Council and its membership is to provide leadership in designing a statistical data system--an education indicators framework and a student assessment program--which allow for efficient use of data for decisionmaking at school, district, state, and national

levels. The Education Data Improvement Project focuses on the education statistics component of this challenge. Improved national statistics will enhance the Council's efforts for better education indicators.

States. States share responsibility for the content and quality of the national statistical database. They provide the data and are usually the unit of analysis reported by the Center for Education Statistics. The Center for Education Statistics reports are used, in turn, to make judgements about the relative efficiency and effectiveness of individual state education systems. States have vested interests in the accuracy and comparability of the data in the national statistical system.

Interrelationships

The Center for Education Statistics is a federal agency with no program authority or responsibility for education. It is charged with reporting on the condition of education in the country. State education agencies are charged with responsibility for the education of children within their jurisdictions. They have varying amounts of authority over the local school districts making up their systems. They collect statistical data from the local school districts to account for educational processes and progress within their own borders. They report those statistics, as requested, to the Center for Education Statistics.

The Council of Chief State School Officers serves as an intermediary between the states and the Center for Education Statistics, having affirmed its responsibilty to provide leadership for improving the national education statistics. The Council, as part of its charge, seeks to improve the Center for Education Statistics database. The State Education Assessment Center is the unit in the Council administratively responsible for improving education data. The Assessment Center, through the Education Data Improvement Project, seeks to influence the quantity, quality, and timeliness of basic data on public elementary and secondary schools through the project.

The Education Data Improvement Project coordinates all of its activities with state education agencies. Project recommendations are conveyed simultaneously to states and to the Center for Education

Statistics for their consideration. The Center for Education Statistics may choose to incorporate the recommendations into its definitions and standards. States, working cooperatively with the Center for Education Statistics, will devise strategies for responding to changes on an individual basis.

Summary

The process of improving the national education statistical system involves independent entities participating in an enterprise with no formal commitments for those individual entities to change. Two factors hold the entire process together and provide the basis for an improved system and better national data on public schools and schooling: all parties are committed, even if not formally, to comprehensive, comparable, and timely education data, and all parties believe that change in the system(s) must be accomplished to achieve their commitments to improved data.

CONCEPTUAL FRAMEWORK

The Education Data Improvement Project's final products are recommendations to the Center for Education Statistics and to states for improving the comprehensiveness, comparability, and timeliness of data in the national statistical database. The recommendations are intended to make the database both adequate and appropriate for achieving its four purposes of providing (1) the official listing of public elementary and secondary schools and school districts, (2) general descriptive statistics on schools and schooling, (3) general data on the financing of publc education, and (4) a sampling frame for major national studies.

To achieve the desired outcomes efficiently and effectively requires formulation of a conceptual framework to guide the design and implementation of project processes. A conceptual framework specifies purposes of the study, tasks to be accomplished, methodology of the study, data sources, and desired outcomes. A project's technical approach should derive from a sound conceptual framework. Figure 2 is a graphic presentation of the conceptual framework for the Education Data Improvement Project.

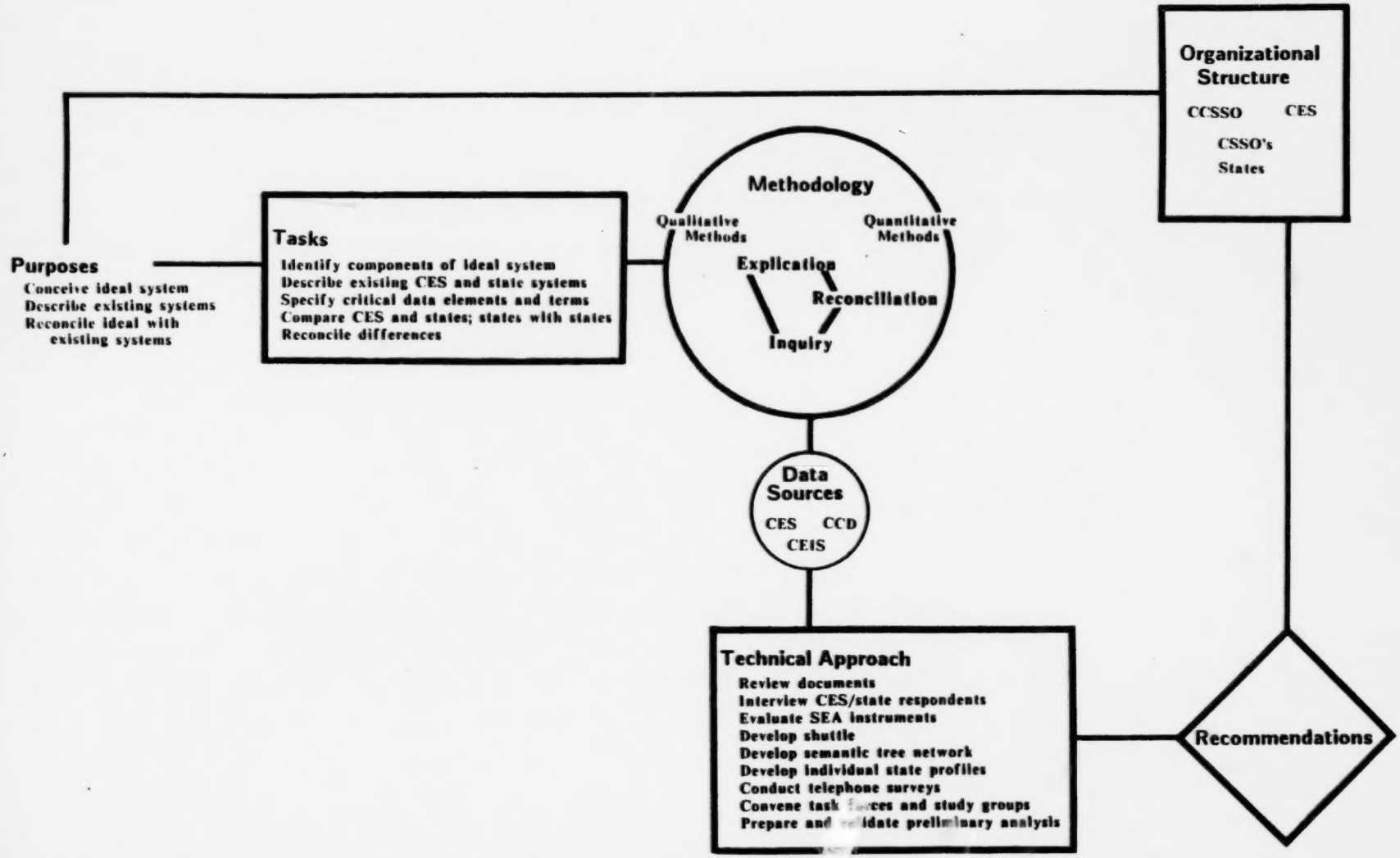

Figure 2. Conceptual Framework for the Education Data Improvement Project

Purposes of the Study

The purposes of the study are:

1. to conceive and describe an ideal system for basic statistical data collection and reporting for elementary and secondary public education;

2. to describe existing state and national education statistical data systems; and

3. to reconcile the existing systems with the ideal to create a new system that is technically accurate and feasible for the Center for Education Statistics and state education agencies.

Tasks of the Study

To fulfill these purposes, the study is organized around six major tasks:

1. Identify components (i.e., structures, processes, and data elements) necessary for a comprehensive national data system that will provide (a) a complete listing of all public schools in the country, (b) basic statistical data on schools and schooling, (c) basic data on the financing and costs of education, and (d) a national sampling frame.

This task runs parallel to, and concurrent with, all other tasks in the Project. It both informs and is informed by other tasks.

2. Describe the current statistical data systems of the Center for Education Statistics and states, including specific data elements that are collected and reported by each.

3. Identify terms and data elements in both the ideal system and the current systems that must be compatable for this system to be sound.

4. Compare state and Center definitions and specifications to determine areas of non-comparability.

5. Reconcile differences between the existing systems and the proposed ideal system.

These tasks are not necessarily sequential. The study is "self-informing," with the responses to one task or set of tasks requiring revisitation of previous ones. Identification of specific data elements and states' current uses of them, for example, require that previously identified data elements be reexamined to determine if they continue to be necessary. These tasks form a complex of decision points, each informing the others until a "best fit" solution is identified.

Methodology

As with the research questions, the methodologies employed in the Project are interrelated and self-informing. Three major types of strategies are used: explication and description, inquiry, and reconciliation. In each case, both qualitative and quantitative methods are employed: quantitative methods when it is possible to obtain numbers of definitions or uses of a term; qualitative methods to generate ideas and explain findings.

Qualitative Methods. Qualitative methods are generally employed at the beginning of a strategy and at the end. At the beginning, qualitative methods are used to search available information to create pools of possibilities that are then catalogued for systematic analysis. In many cases, qualitative analyses are used to examine current statistical systems in other agencies, such as the Office of Special Education and Rehabilitation Services in the U.S. Department of Education and the Bureau of the Census, to determine their uses of collection and reporting procedures or their definitions of terms or specifications for individual data elements. Knowledge of other systems assists in making choices within the national education statistical database to select most likely choices for further study. Such prior knowledge is critical to efficient operation of project processes. It permits the project to narrow the options to be examined in greater detail or to extend the analysis.

At the end of a project strategy, when quantitative information is available for making decisions, qualitative methods are again employed to help explain the findings. Quantitative tabulations of state responses to a data element or term often obscure the profundity or pervasiveness of a given problem or impact that an individual state variation will have on measurement across all states. For example, a state may define a dropout to be a student above compulsory attendance age only, or below compulsory attendance age only. While only two states use compulsory attendance as a factor in counting students who drop out of school, the problem must be identified and resolved if data are to be comparable across states. Qualitative analysis helps to identify and explain such issues. Without using various qualitative techniques many subtleties imbedded in quantitative data will be missed.

Quantitative Methods. Quantitative procedures are employed throughout, whenever possible. When qualitative methods identify a pool of options, the options are coded on a semantic tree network so the individual definitions and variations can be compared. Figure 3 presents the components of the semantic tree network for a specific data element "public school student." For example, individual states have regulations or guidelines that govern their uses of a term or data element, such as enrollment counts of public school students. Some states include in their enrollment counts all students who withdraw; while other states exclude withdrawal from their enrollment counts. The latter enrollment count is the same as the membership counts in other states. The codification of state responses according to a standard, semantic framework allows such comparisons to be made and quantified. Quantification expendites manipulation and interpretation.

State responses are quantified to ensure that judgements are made based on the current status of data collection and reporting in the states. Patterns in quantifiable data are easier to detect and explain.

Explication and Description. For the purposes of this study, explication is defined as careful and systematic study of facts, revelation of existing and past conditions, and making those conditions explicit. The project's purpose of describing existing state and national data systems requires review of existing documents from the Center for Education Statistics and states, including data collection forms, data element dictionaries, guidelines and regulations. As an economy measure for saving time and project and state staff resources, the project's explication processes eliminate the need to examine all possible components in existing state systems. For example, the common core of data does not request enrollment by grade at the school level; however, through an early exploratory telephone interview with states, it was discovered that all states currently maintain that information in their systems. On the other hand, examination of information from the Center and from states indicates that the current use of standard metropolitan statistical area (SMSA), designation by district, is neither accurate nor adequate for its intended purposes. Consequently, this data element was not included in the project's inquiry stages.

Data Element -- a definite, variable, measurable unit of schools, students and staff (identified by all capital letters and bold type)

Specification -- detailed description of meaning and critical factors affecting measurement of a data element as defined and agreed to by the Center for Statistics

1. kernel -- principal part of the specification; part on which everything else rests (identified by initial capital letter and bold type)

2. base string -- essential element prescribing limits of a specification (identified by black bullets)

Variant String -- factor identified by state(s) as operationally lacking agreement with a specification (separated from base strings by a line; identified by white bullets)

DATA ELEMENT AND SPECIFICATIONS

Data Element------PUBLIC SCHOOL STUDENT
Kernel----------Individual enrolled in a school:
Base String--------● operated by a local public school agency
● operated by a state education agency
● operated by federal government

Variant String----------o excludes nonresident students

Figure 3. Components of Semantic Tree Network

The common core of data has been in existence for more than a decade and was preceded by other national data systems; each state education agency has an extensive statistical data system. This project builds on and refines those existing systems and is not intended to create a new one. Thus, discovering the components that currently exists in the national and state systems and their subcomponents, their actual and perceived uses, and their interrelationships is a necessary first step. However, the explication methodology is not just a preliminary phase of the study; it is necessary at each step to ensure that all of the facts are known to focus further study on the most pertinent aspects of the data systems.

While the explication steps inform subsequent stages of the process, those subsequent stages reveal information that makes further explication necessary. This is a cyclical and continuing process throughout the project.

The explication and description methodologies are primarily qualitative in nature. Wherever possible the qualitative information is codified and quantified to assist in interpretation.

Inquiry. The processes employed in the project are based on the tenets that the quality of information is significantly improved if it is based on aggregate judgements of a number of individuals. Multiple opportunities for an individual to correct and refine given responses, significantly improve the quality of information. The methodology used for the inquiry phase of the Project is an "inverted Delphi" technique.

The Delphi technique was introduced in 1963 by the Rand Corporation as a process of multiple iterations with controlled feedback. It is a method "for the systematic solicitation and corroboration of judgements on a particular topic through a set of carefully designed sequential questionnaires interspersed with summarized information and feedback of opinions derived from earlier responses." The Delphi technique is generally used to establish consensus about a particular issue or set of issues. In the Education Data Improvement Project, the technique was used to refine, successively, information from the state education agencies and

to improve the quality of the information. Thus, it was not used to generate consensus but rather to differentiate state practices that are initially presumed to be similar. Thus the "inverted Delphi".

The inquiry phase of the project is structured by multiple iterations of data collection. The first iteration is a summary of each state's practice, based on an initial explication derived from state forms and report. State data collection and reporting forms are reviewed by project staff, findings are preprinted onto instruments sent to state respondents who, in turn, respond with more accurate information. Individual state respondents are then provided opportunities to react by concurring with the finding, adding or subtracting information from the finding, or submitting new information altogether.

Each successive iteration results in a wider range of responses and forms the basis for the next iteration(s). As each set of responses is received from states, individual item responses are codified, using a semantic tree network, and the codified responses are returned to the respondents. In subsequent iterations, individual respondents refine their initial responses, using the pool of knowledge from all respondents. In this manner, state information and manipulatable interpretations are refined and the overall pool becomes more complete. Figure 4 illustrates the coding of the term "public school." The bulleted word strings are codified and manipulatable responses from all state education agencies, and the aggregate of the word strings form the project's database for the reconciliation phase that follows.

TERM AND DEFINITION	
Term----------	PUBLIC SCHOOL
Kernel---------	Elementary or secondary school:
Base----------	• operated by a state
String	• operated by a subdivision of a state
	• operated by a government agency within a state
	• operated by the federal government
Variant----------	o operated by an administrative unit subject to state rules, regulations and minimum standards
String	o excludes publicly supported private agency school

Figure 4. Example of Semantic Coding of "Public School"

Reconciliation. The project's database is structured around specific terms, used by the Center for Education Statistics and states, that influence the statistical and financial data reported by states to the Center. If the terms are defined differently by different states, then data across those states will not be comparable. For example, the term "school" is the basis for all student counts. If one state includes or excludes a class of schools that is assumed by the Center to be included, then that state's school and student counts will be either inflated or deflated. This not only provides an inaccurate and incomplete picture of the number and types of schools, it also affects all other calculations using those counts, such as costs per student and student-teacher ratios.

The project's database contains, in addition to measurement-related terms, data elements that are considered potential statistics for the national statistical data system, i.e., student counts, number of limited English proficient students, number of students by racial/ethnic grouping, among others. The individual state specifications identify variations in the collection and reporting of data that affect comparability of statistics across states. For example, when a student count is taken influences the numbers. Enrollment, viewed as a cumulative count of all students registered for schooling, is a different population of students if it is taken in the fall as compared to a count taken in the spring. The fall count includes a minimum of students who have transferred in or transferred out, while a spring count includes all of the students transferring in without adjusting for those students transferring out. A spring enrollment count reflects duplicate reporting of all transferred students.

Reconciliation of information within the Project's database takes two forms: tabulation of different responses (i.e., word strings) by individual states and across states, and interpretation by "experts." The tabulations provide the basis for the interpretative processes. The interpretative process either reconciles the differences, based on available information or results in new data collection and tabulations, to provide more complete studies of the current state practices. The "experts," recognized by other authorities as knowing the field and generally recognized as knowing the particular facts and findings, are

convened in task forces and study groups to examine particular areas of concern in how data elements are defined. For example, a task force of state and local education agency staff with experience in counting dropouts, federal agency and private enterprise researchers, with responsibilities for evaluating and reporting national dropout statistics, and university-based researchers examined current state practices and made recommendations for developing a standard dropout statistic across all states.

Data Sources

All three methodologies--explication, inquiry, and reconciliation--employ the use of those persons closest to, and responsible for, the nature and quality of state and national data. Those persons serve as respondents for the project. At the national level, Center for Education Statistics' administrators and staff provide data for project use. At the state level, the primary respondents are persons identified on the state's contract with the Center as the common core of data coordinator. Also at the state level, the chief state school officer's designee to the Council's Committee on Evaluation and Information Systems (CEIS) provides a review of all information reported for that state. All final information is reviewed by the chief state school officer.

The data sources for the Project are documents used by the Center and individual states for collecting and reporting data to the Center for Education Statistics. Documents include the Center's handbook series on the common core of data, their instruments for collecting data, and guidelines and regulations pertaining to the data collection process. For states, the documents generally include state legislation, handbooks, guidelines, and regulations for state and school district reporting, data element dictionaries, and data collection and reporting forms. The composition of documents varies from state to state. The Project uses whatever is available from individual states.

Following is a description of nine major strategies used by the project to accomplish its tasks and to arrive at final recommendations for the Center for Education Statistics and states. While the format suggests that the strategies are sequential, they are not. The strategies are interrelated and overlap one another forming a complex of techniques used by the project. Two companion reports, "Development of a Shuttle for Verifying Data Elements Collected by State Departments of Education and Reported to the U. S. Department of Education's Center for Statistics" and "A Compendium: State Profiles of School and School District Universe Files" describe the project's use of the strategies.

- Review Center for Education Statistics documents, including all parts of the Common Core of Data instrument used during the 1985-86 school year. There are six parts (i.e., school universe, school district universe, local education agency fiscal and non-fiscal, and state fiscal and non-fiscal). The project is designed to address the two universe parts during the first project year with non-fiscal elements added as necessary to provide basic descriptive statistics on schools and school districts. The second project year focuses on fiscal data with additional non-fiscal data as needed to provide comprehensive financial information. The third year of the project integrates findings of the universe files, non-fiscal and fiscal components into an integrated, comprehensive statistical data system.

  Other documents used include recent guidelines for completing the common core of data instruments, appropriate Handbooks in the State Education Records and Reports Series, invited papers for the Elementary and Secondary Statistics Redesign Project and other Center reports, such as the "Condition of Education," and "Digest of Education Statistics." An initial review yields an extensive list of potential universe data elements, either currently collected by the Center or viewed as necessary by users of the national statistical data system. (Potential users are units within the Center itself for selecting samples for the National Assessment of Educational Progress or NELS 88.) The initial listing of data elements includes all elements mentioned in the literature, with no judgements regarding their appropriateness or adequacy for the universe files.

  Reviews of Center documents provide accepted definitions of terms and specifications for selected data elements. These definitions and specifications become initial standards by which state responses are measured. Variations from the standards form the basis for reconciliation stages of the Project.

- Interview individuals on the Center for Statistics' staff and on state education agency staff who are familiar with the Center and the Common Core of Data instruments and data collection procedures. The interviews provide evaluations of each element on the list of potential data elements and specific recommendations for including them, or not. In many instances the interviews suggest additional or related terms to be standardized, if data elements are to be comparable across states (e.g., school, public school).

  The interviews provide initial and continuing reviews and refinements of the standard definitions. Interviews occur at the end of the inquiry stages and within the reconciliation stages to interpret findings and individual state variations.

- Evaluate state education agency instruments used for collecting data from school districts. The evaluations identify data elements currently and generally collected by states. These additional data elements and terms are evaluated for possible inclusion on the master list. Also, the evaluations identify data elements on the original list that are not generally included by states. In such instances, the data elements are re-evaluated for determining their continued inclusion. The list of data elements is further refined using both interview information and evaluations of guidelines for completing the instrument and other related state-specific documentation. Related terms are identifed and added to the list in a similar manner.

- Develop an instrument for verifying data elements collected by state departments of education and reported to the Center for Statistics. The instrument, or Shuttle, is completed by Project staff using state data collection forms, sent to the states, and verified or corrected by Common Core of Data Coordinators in each state agency. The Shuttle process is described in a white paper, "Development of a Shuttle for Verigying Data Elements Collected by State Departments of Education and Reported to the U. S. Department of Education's Center for Statistics."

- Develop a taxonomy for coding state responses on the Shuttle. The taxonomy is a semantic tree network that standardizes language across all states and provides a format that permits comparisons of individual state definitions and procedures. The newly-worded and formatted responses are verified by states to assure the intent of their original, open-ended responses is maintained. The state respondents are provided with a cumulative listing, or catalogue, of all state responses, to compare information across states. The catalog assures that factors omitted by one state from the responses to the Shuttle but included by another are considered by both states to ensure the continued accuracy and completeness of initial responses.

- Develop individual state profiles of selected data elements and related terms from the responses on the Shuttle, using the taxonomy described above. The Profiles display contextually, the terms and data elements presented on the Shuttle, incorporate changes identified through the Shuttle process, and permit another

opportunity for state respondents to review and refine information. The Profiles are corrected, based on the first review, and are submitted for verification at least one more time. After the state respondent is satisfied that information is complete and accurately represented, the Profiles are submitted to chief state school officers for final verification. After the chief state school officers review and refine the Profiles, information on the individual state Profiles becomes the database for the reconciliation stage of the Project.

The Profile process and a complete set of Individual State Profiles is presented in "A Compendium: State Profiles of School and School District Universe Files."

- Conduct telephone surveys of Common Core of Data Coordinators to obtain both clarifications of state information on the Profiles and additional data not received through the Shuttle or Profile processes.

- Convene task forces and study groups to provide in-depth analyses of data elements or sets of elements, to reconcile differences observed across states on terms and data element specifications, and to suggest recommendations for improving definition and collection on the data element.

- Prepare preliminary analyses of state-by-state data for verification of results by state respondents and chief state school officers.

RECOMMENDATIONS: PRESENTATION AND IMPLEMENTATION

The Education Data Improvement Project conveys its findings and recommendations conjointly to the Center for Education Statistics and the Council of Chief State School Officer's Committee on Coordinating Education Information and Research (CEIR) for action. CEIR receives project recommendations and may choose to take action based on the Council's policies on evaluation and assessment. CEIR may approve the recommendations, modify them, or disapprove them. CEIR reports its recommendations to the Council of Chief State School Officers. Council actions and positions are forwarded to the Center for Education Statistics and to states. States take the Council's recommendations under consideration for possible implementation with the Center for Education Statistics.

The Center for Education Statistics may choose to incorporate the recommendations into its elementary and secondary education statistical system. If the Center chooses to make recommended changes, it will coordinate those changes with individual state education agencies. Participation by states is, of course, voluntary.